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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/708,186
Filing Date: February 13, 2004
Appellant(s): SUTHERLAND ET AL.

Simon Foxcroft
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 18, 2007 appealing from the Office action mailed March 30, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

Regarding Appellants statement on page 2, item (iv), the amendments filed March 22, 2007 have been entered given that the amendment filed March 22, 2007 was filed prior to the final office action mailed March 30, 2007.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

WITHDRAWN OBJECTIONS

The following grounds of Objection are not presented for review on appeal because the examiner has withdrawn them. Upon further consideration, the objections to the specification and drawings have been withdrawn. While not originally shown, the addition of new reference character 51 to the specification and the drawings appears to

have reasonable support in the original written description and such changes to the disclosure would have been readily understood by one of ordinary skill in the art.

The appellant's statement of the remaining grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

WO 98/57384 A1	DONELSON	12-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 98/57384 to Donelson (WO '384).

WO '384 discloses a planar solid oxide fuel cell stack 10 comprising a lower horizontal compression plate (not shown but inherent to impart the requisite compression described in WO '384), an upper horizontal compression plate (not shown but inherent to impart the requisite compression described in WO '384), a plurality of interleaved fuel cells 16, seals and interconnects 12, 14, a cathode current collector

plate 22 and an anode current collector plate 18 disposed between the upper and lower compression plates, wherein the stack defines vertical fuel intake and exhaust manifolds and vertical air intake and exhaust manifolds, said stack comprising: (a) a seal element 34 having a cell opening; (b)a compressible, conducting element 42 disposed within the cell opening of the seal element 34; (c)wherein the seal element 34 and the compressible element 42 are disposed between the cathode current collector plate and a terminal interconnect at the cathode end of the stack or between the anode current collector plate 18 and a terminal interconnect 12 at the anode end of the stack, or both. (Fig. 2 as applied to claim 1).

Possible examples of the compressible means for use on the anode side of the fuel cell include a structure, such as a metallic corrugation or a porous metallic felt, which retains some resilience at the operating temperature; and a composite of a porous brittle material and a metal (page 4, ll. 24-27). A porous metallic felt is held to be identical to a metallic foam (as applied to claim 2).

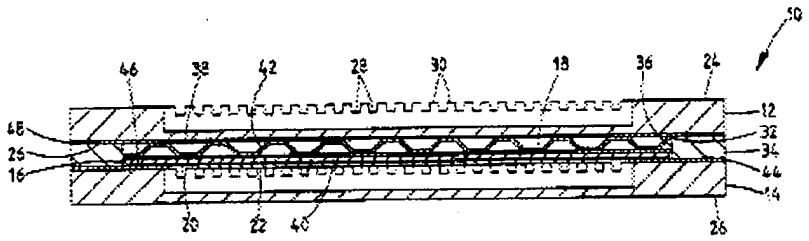
The preferred metal is nickel (page 4, ll. 18-22 as applied to claim 3).

The seal element 34 defines an area where fuel passes from the intake manifold 54 such that fuel pass through and around compressible element 42 (Fig. 2 as applied to claim 4).

The interconnect 24 comprises flow directing ribs 30 in contact with an electrode surface and the conducting element 42 (Fig. 2 as applied to claim 5).

WO '384 discloses a planar solid oxide fuel cell stack having a compression plate (not shown but inherent to impart the requisite compression described in WO '384) and

a terminal fuel cell (inherent to a fuel cell or stack of fuel cells), said fuel cell stack comprising: (a)a current collector plate 38 comprising a substantially planar element disposed immediately adjacent the compression plate 12; (b)an interconnect plate 40 disposed immediately adjacent and in electrical contact with the terminal fuel cell 16; (c)a compressible layer 42 comprising a compressible electrically conductive element 42 in electrical contact with the interconnect plate 40 and the current collector plate 38 (Figs. 1 and 2 as applied to claim 6).



The compressible layer 42 comprises a sealing component 34 surrounding the compressible layer (Figs. 1 and 2 as applied to claim 7).

The compressible element 42 comprises nickel and the seal element 34 defines a fuel passage for diverting fuel from an intake manifold 54, through or around the compressible element and into a fuel exhausts manifold 56 (Fig. 2 as applied to claim 8).

Possible examples of the compressible means for use on the anode side of the fuel cell include a structure, such as a metallic corrugation or a porous metallic felt, which retains some resilience at the operating temperature; and a composite of a porous brittle material and a metal (page 4, ll. 24-27). A porous metallic felt is held to

be identical to a metallic foam. The preferred metal is nickel (page 4, ll. 18-22 as applied to claim 9).

(10) Response to Argument

Issue I - Appellant argues that the amendments to the specification and Fig. 4 do not introduce new subject matter into the application.

This argument is persuasive and the objections to the specification and drawings have been withdrawn.

Issue IIA - Appellant argues that Donelson (WO '384) does not disclose or teach an assembly that addresses the loading between current collection plates and terminal interconnect plates.

In reviewing Appellants arguments to Issue II (commencing at the top page 5 of Appellants Appeal Brief), the Examiner has considered Appellants statements made on pages 5-7. It appears Appellants first argument germane to the claimed invention is presented in the paragraph bridging pages 6 and 7 which, as stated above, argues that Donelson (WO '384) does not disclose or teach an assembly that addresses the loading between current collection plates and terminal interconnect plates. Appellants statements made prior to this argument have been considered but are not germane to claimed invention or particularly persuasive in distinguishing how WO'384 fails to anticipate the claimed invention.

Regarding the argument that Donelson (WO '384) does not disclose or teach an assembly that addresses the loading between current collection plates and terminal interconnect plates, the Examiner respectfully disagrees.

First this argument is not persuasive since the claims do not positively recite addressing of the loading between current collection plates and terminal interconnect plates.

Second, as discussed in the prior art rejections of record, WO '384 discloses providing the fuel cell shown in Fig. 1 in a compressed stack (not shown). Each interconnect is clearly described as being a terminal interconnect by WO '384 (see page 1, ll. 13-18). WO '384 is concerned with addressing compression between various elements of each fuel cell shown in Fig. 1 which is then provided in a stack of fuel cells. This would include the various seals, compressible elements, current generating elements (i.e. fuel cell electrolyte and catalytic layers disposed adjacent to the electrolyte) and electron conductive compressible elements disposed between adjacent fuel cells in the stack. In short, WO '384 is reasonably held to be concerned with compression and contact between all layers and elements in a fuel cell and fuel cell stack. So it would appear that WO '384 is drawn to the same general technical concept of improving compression and contact between compressible elements in a fuel cell stack. Yet, even if WO '384 is found not address the problem addressed by the instant application, the claims themselves are drawn to an apparatus and it is the Examiner's position that the prior art apparatus of WO '384 teaches of all of the claimed features and thus is structurally identical to the claimed apparatus. Appellant is reminded that in apparatus or article claims must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art.

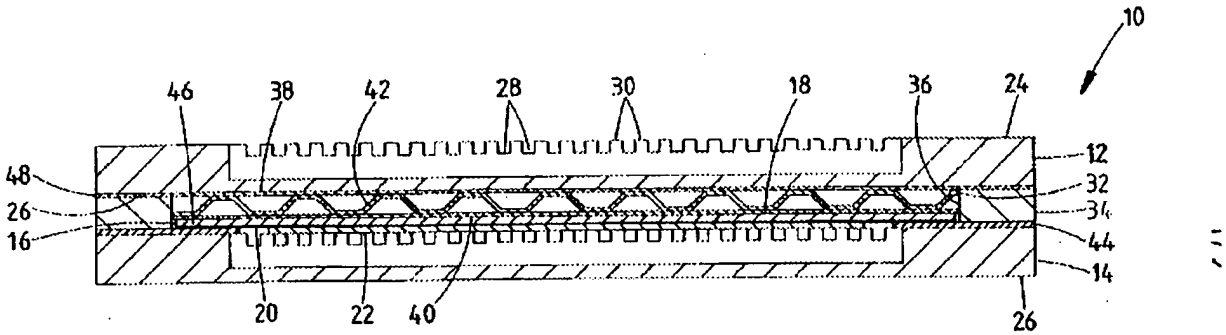
Thus this statement is not persuasive.

As to the claimed invention relative to the fuel cell and fuel cell stack of WO '384, the prior art is held to still anticipate the claimed invention for at least those reasons set forth in the previous office actions, incorporated herein and for reasons set forth above and herein.

Appellant subsequently argues that while various elements of WO '384 may share some functional characteristics such elements are not analogous elements and assertions to the contrary ignores the teachings of both the present application and WO '384.

The Examiner is not persuaded by this argument.

First, this argument is not persuasive in overcoming the anticipatory rejection of WO '384 as applied to claims 1-5 and 6-9 above. WO '384 shows:



Therein either the backside of the anode layer 18 or the adjacent plate layer 40, both of which are made of electron conductive materials can serves as the current collector. Given this interpretation, then the seal element 34 and compressible element

42 are shown to be disposed within a region defined between the interconnect 12 and either the backside of the electrode 18 or plate layer 40 each of which serves to function as a current collector for collection current from the fuel cell.

The claim does not preclude that the anode and anode current collector are discrete elements from one another, and as admitted by Appellant, electrode layers can recognizably exhibit some functional characteristics as a current collector plate (notably to collect and conduct current). Thus the prior art apparatus of WO '384 can be held to reasonably anticipate the claimed arrangement.

Alternatively, nickel layer 40 which is immediately between the compressible element 42 and backside of the anode layer 18 collects and conducts current from the fuel cell to the compressible element and interconnect 12. Thus in the alternative, layer 40 can be construed to be a current collector.

In either interpretation WO '384 is held to disclose a structure which is identical to the structure recited in claims 1-5 and while the elements in the claims and the elements relied upon in WO '384 might be labeled different from one another, this argument alone cannot be persuasive which it is shown that the structural elements in the invention of claims 1-5 are reasonably taught by the structural elements of WO '384. The Examiner has used the language and structure of claim 1 employed by the instant application substituting the various reference characters of WO '384 into the claim as applied to the various elements recited therein. While the reference and the instant application may apply different names to each element pertinent to the features of claim 1, this is not the standard for overcoming a prior art reference which is held to anticipate

the claims their broadest reasonable interpretation. Therefore this rejection should be sustained.

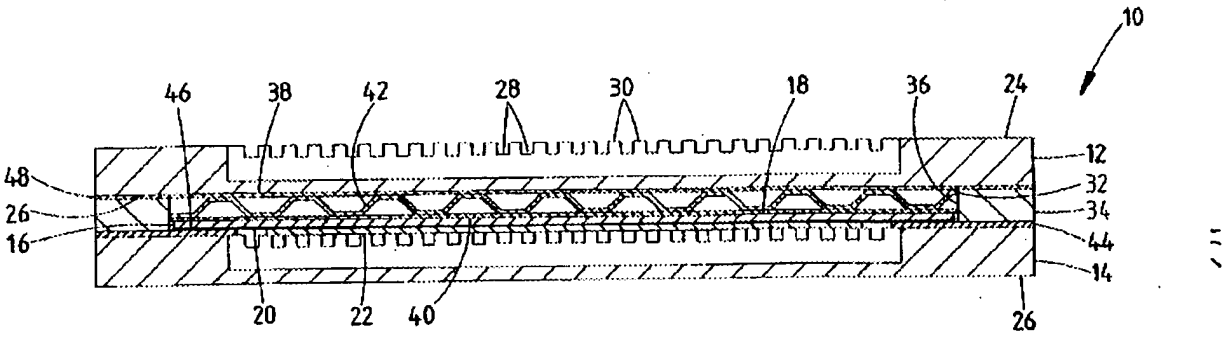
Regarding claim 6 and its dependent claims and as recited in the rejection of record: "WO '384 discloses a planar solid oxide fuel cell stack having a compression plate (not shown but inherent to impart the requisite compression described in WO '384) and a terminal fuel cell (inherent to a fuel cell or stack of fuel cells), said fuel cell stack comprising: (a)a current collector plate 38 comprising a substantially planar element disposed immediately adjacent the compression plate 12; (b)an interconnect plate 40 disposed immediately adjacent and in electrical contact with the terminal fuel cell 16; (c)a compressible layer 42 comprising a compressible electrically conductive element 42 in electrical contact with the interconnect plate 40 and the current collector plate 38 (Figs. 1 and 2 as applied to claim 6). The compressible layer 42 comprises a sealing component 34 surrounding the compressible layer (Figs. 1 and 2 as applied to claim 7). The compressible element 42 comprises nickel and the seal element 34 defines a fuel passage for diverting fuel from an intake manifold 54, through or around the compressible element and into a fuel exhausts manifold 56 (Fig. 2 as applied to claim 8). Possible examples of the compressible means for use on the anode side of the fuel cell include a structure, such as a metallic corrugation or a porous metallic felt, which retains some resilience at the operating temperature; and a composite of a porous brittle material and a metal (page 4, ll. 24-27). A porous metallic felt is held to be identical to a metallic foam. The preferred metal is nickel (page 4, ll. 18-22 as applied to claim 9)"

While the descriptive terms used in the instant application and that of WO '384 may be different, this argument cannot be found persuasive since WO'384 as discussed above reasonably anticipates the structure of the claimed fuel cell.

The Examiner has used the language and structure of claim 6 employed by the instant application substituting the various reference characters of WO '384 into the claim as applied to the various elements recited therein. While the reference and the instant application may apply different names to each element pertinent to the features of claim 6, this is not the standard for overcoming a prior art reference which is held to anticipate the claims their broadest reasonable interpretation.

As shown, WO '384 teaches of a plate 38 which is nickel, which is electron conductive and thus collects and conducts current. This plate is positioned immediately adjacent to the corrugated compression plate 42 which is also made of an electron conducting material and thus in electrical contact with the plate 38. Any plate which connects one fuel cell to another can reasonably be construed to be an "interconnecting element" and the claims fail to provide any distinguishing features to preclude such an interpretation relative to the disclosure of WO '384. With that, then plate layer 40 which can connect the fuel cell shown in Fig. 1 to remaining fuel cells in the fuel cell stack (stack not shown but readily disclosed, see Abstract) and which is a nickel material functions as an interconnecting member and is in electrical contact with the

compressible member 42.



In so far as the invention as defined in claim 6 is concerned, it is apparent that the structure defined therein is broadly and reasonably taught by WO '384 as set forth in the prior art teachings of WO '384 and as described by the Examiner in the rejections and arguments of record. To date, Appellant has not shown any clear and convincing evidence as to how the invention, as claimed, is not anticipated by the structure of WO '384. Therefore, the Examiner maintains that WO '384 still anticipates the invention of claims 6-9 and the grounds of rejection are maintained and should be sustained.

Issue IIB - Appellant argues that Donelson (WO '384) does not disclose or teach of a floating current collector.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., floating current collectors) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In addition, this argument is not persuasive since the claims fail to recite

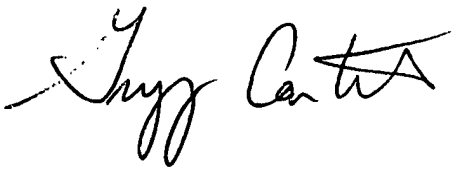
sufficient structure so as to define a "floating current collector" in any manner so as to structurally and patentably distinguish it from the fuel cell of WO '384.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Gregg Cantelmo

Primary Examiner - 1795



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